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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/720,812

11/24/2003

Jung S. Kang

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06/02/2006

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EXAMINER

BLUM, DAVID S

ART UNIT

PAPER NUMBER

2813

DATE MAILED: 06/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/720,812

Applicant(s)

KANG ET AL.

Examiner

David S. Blum

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 1-8, 13, 14, 21, 22 and 25-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-12, 15-20, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-48 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

This action is in response to the election filed 2/23/06.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 9-12, 15-20 and 23-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Pasch (US005821624A).

Pasch teaches the device of claims 9-12, 15-20 and 23-24 as follows.

Regarding claim 9, Pasch teaches a passive element (column 24 lines 39-41) between upper and lower dies (column 25 lines 22-24, substrate/interposer (spacer)/die stack, column 23 lines 7-8, substrate may be another die), and conductors attached to the passive element to at least one of the upper and lower dies (column 24 lines 53-58).

Regarding claim 10, adhesive layers are filled between the spacer (interposer) and the upper and lower dies (column 25 lines 22-24).

Regarding claim 11, the element may be a thin film (column 26 line 16, thin metal film, and as above, the thin film may also be a another passive device).

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Regarding claim 12, the passive device is substantially thinner than the thickness of the spacer (figure 12A).

Regarding claim 15, the passive element may be electrically connected to the upper or lower dies using bumps (column 26 lines 10-16).

Regarding claim 16, the lower die may be attached to a substrate using an adhesive (column 25 lines 19-20).

Regarding claim 17, Pasch teaches a package substrate (column 23 lines 24-26), a plurality of stacked dies (figure 11B), a spacer assembly between the upper and lower dies having a passive element (column 24 lines 39-41) between upper and lower dies (column 25 lines 22-24, substrate/interposer (spacer)/die stack, column 23 lines 7-8, substrate may be another die), and conductors attached to the passive element to at least one of the upper and lower dies (column 24 lines 53-58).

Regarding claim 18, adhesive layers are filled between the spacer (interposer) and the upper and lower dies (column 25 lines 22-24).

Regarding claim 19, the element may be a thin film (column 26 line 16, thin metal film, and as above, the thin film may also be a another passive device).

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Regarding claim 20, the passive device is substantially thinner than the thickness of the spacer (figure 12A).

Regarding claim 23, the passive element may be electrically connected to the upper or lower dies using bumps (column 26 lines 10-16).

Regarding claim 24, the lower die may be attached to a substrate using an adhesive (column 25 lines 19-20).

Response to Arguments

3. Applicant's arguments filed 2/23/06 have been fully considered but they are not persuasive.

The applicant argues that passive elements may be an inductor and a capacitor. The examiner does not argue with this statement, but as a passive element may be other than a capacitor or an inductor, and a capacitor is not an inductor, it is proper to treat the three as separate species. The applicant did not go on the record stating that the three species are obvious variants, therefore the restriction is proper.

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The applicant argues that Pasch does not place a passive element on a spacer between dies. However, Pasch places a passive device on an interposer (a spacer between dies) and this electronic device would need conductors to function.

The applicant argues that there are no stacked dies, however (column 25 lines 22-23) recite "the adhesive can also be used to keep the substrate/interposer/die stack under compression. Figure 11a shows a substrate with electrical elements (thus a die) and interposer, conductive element on the interposer, and a second die. This reads on the instant claims.

The applicant argues that Pasch does not disclose a conductor attached to at least one of the upper or lower dies. However, Pasch shows the conductor (1125a) connected to passive element a (1127a) , and connected to a solder bump connected to a die. This reads on the instant claims.

The applicant argues that there is no stacked dies or passive element. However, as above, Pasch teaches a stacked die and a passive element.

The applicant repeats the above arguments toward claim 17. As above, the examiner asserts that Pasch reads on claim 17.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Blum whose telephone number is (571)-272-1687) and e-mail address is David.blum@USPTO.gov .

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr., can be reached at (571)-272-1702. Our facsimile number all patent correspondence to be entered into an application is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "DOSA", followed by a horizontal line.

David S. Blum

June 1, 2006